

Grades 6–8: Algebra

STANDARD		I.	Understand patterns, relations, and functions.
EXPECTATION	A.	Represent, analyze, and generalize a variety of patterns with tables, graphs, words, and, when possible, symbolic rules.	
	6	7	8
	* 1. Describe, extend, and write rules for a wide variety of patterns.	1. Describe, extend, analyze, and create a wide variety of patterns to investigate relationships and to solve problems.	
EXPECTATION	B.	Relate and compare different forms of representations for a relationship.	
	6	7	8
		1. Use different forms of representing information (e.g., graphical, symbolic, tabular).	1. Describe the merits and limitations of graphical, symbolic, and tabular representations.
EXPECTATION	C.	Identify functions as linear or nonlinear and contrast their properties from tables, graphs, or equations.	
	6	7	8
		1. Examine tables and graphs to determine if there is a constant rate of change between the quantities.	1. Examine tables, graphs, or simple equations to classify relationships as linear or nonlinear.

STANDARD

II. Represent and analyze mathematical situations and structures using algebraic symbols.

EXPECTATION

A. Develop an initial conceptual understanding of different uses of variables.

6	7	8
*1. Use order of operations to evaluate numerical expressions.		*1. Evaluate simple algebraic expressions for given values of variables by using the substitution principle and the rules for order of operations.
	1. Explain the use of a variable as a quantity that can change its value, as a quantity on which other values depend, and as generalization of patterns.	

EXPECTATION

B. Explore relationships between symbolic expressions and graphs of lines, paying particular attention to the meaning of intercept and slope.

6	7	8
1. Write simple equations and inequalities accurately to represent relationships.	1. Analyze quantitative changes by comparing and contrasting numerical patterns in tables with their respective graphs in the coordinate plane.	
	2. State the coordinates of the x and y intercepts from a graph.	1. Explain the impact of coefficients and constants on linear equations as they reflect simple applications.

EXPECTATION

- C. Use symbolic algebra to represent situations and to solve problems, especially those that involve linear relationships.

6	7	8
	1. Use variables to describe numerical expressions and relationships.	1. Write or model a linear equation to solve a simple applied problem.

EXPECTATION

- D. Recognize and generate equivalent forms for simple algebraic expressions and solve linear equations.

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		*1. Simplify a variety of algebraic expressions using properties of real numbers and rules for order of operations.

6	7	8
1. Use commutative, associative, and distributive properties to examine equivalence of a variety of simple algebraic expressions.	1. Recognize and apply the additive and multiplicative inverses.	*2. Using strategies that involve inverse operations, solve one- and two-step linear equations and inequalities in one variable.

STANDARD III. Use mathematical models to represent and understand quantitative relationships.

EXPECTATION A. Model and solve contextualized problems using various representations, such as graphs, tables, and equations.

6	7	8
1. Use graphs and tables to solve applied problems.	* 1. Use graphs, tables, and equations to solve applied problems involving tips, discounts, sales tax, and simple interest.	* 1. Use one or more representations to model and to analyze the relationship in applied problems to determine if it is linear or nonlinear.

STANDARD IV. Analyze change in various contexts.

EXPECTATION A. Use graphs to analyze the nature of changes in quantities in linear relationships.

6	7	8
		1. Use tables and graphs to model and analyze linear relationships between variables.